Achieving stable human stem cell engraftment and survival in the CNS: is the future of regenerative medicine immunodeficient?

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Public Summary:
There is potential for a variety of stem cell populations to mediate repair in the diseased or injured CNS; in some cases, this theoretical possibility has already transitioned to clinical safety testing. However, careful consideration of preclinical animal models is essential to provide an appropriate assessment of stem cell safety and efficacy, as well as the basic biological mechanisms of stem cell action. This article examines the lessons learned from early tissue, organ and hematopoietic grafting, the early assumptions of the stem cell and CNS fields with regard to immunoprivilege, and the history of success in stem cell transplantation into the CNS. Finally, we discuss strategies in the selection of animal models to maximize the predictive validity of preclinical safety and efficacy studies.

Scientific Abstract:
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